

Appl. No. 10/810,309
Amdt. Dated October 26, 2005
Reply to Office Action of July 26, 2005

Attorney Docket No. 81716.0122
Customer No.: 26021

REMARKS/ARGUMENTS:

Claim 17 is canceled without prejudice. Claims 2 and 15 are amended. Claims 1-16 and 18-32 are pending in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

The invention relates to a semiconductor apparatus and specifically relates to a semiconductor apparatus, a method for growing a nitride semiconductor and a method for producing a semiconductor apparatus which are suitable for a light emitting device and a light receiving device such as a light emitting diode (LED), a laser diode (LD), a solar cell and a photosensor, and an electronic device such as a transistor and a power device. (Applicant's specification, at p. 1, lines 7-14).

DRAWINGS:

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 28 in fig. 17.

The Applicant respectfully traverses this objection. At p. 2, lines 17-20 of the Applicant's specification, reference character 28 is described as being an "n-type electrode". Consequently, reference character 28 is mentioned in the description. Withdrawal of this objection is thus respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 112:

Claim 15 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Office states that there is insufficient antecedent basis for the limitation "wherein an angle θ_1 formed by a normal line of the principal surface of the

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substrate and a normal line of the (0001) plane of the substrate is $0^\circ \leq \theta_1 \leq 5^\circ$ in claim 15. The Applicant respectfully disagrees. The Applicant believes that sufficient antecedent basis for all the terms in this limitation can be found in either claim 15 or claim 2, from which claim 15 depends. The Applicant respectfully submits that the (0001) plane is inherent in the substrate and therefore, requires no antecedent basis. However, in order to expedite the prosecution of the instant application, the Applicant changed "the (0001) plane" to --a (0001) plane--. Withdrawal of this rejection is thus respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102:

Claims 2, 4, and 8 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Hori et al. (U.S. Patent No. 6,583,468). The Applicant respectfully traverses the rejection. Claim 2, as amended, is as follows:

A semiconductor apparatus comprising:

a substrate made of a diboride single crystal expressed by a chemical formula XB_2 , in which X includes at least one of Ti, Zr, Nb and Hf,

wherein an angle θ_1 formed by a normal line of a principal surface of the substrate and a normal line of a (0001) plane of the substrate is $0^\circ < \theta_1 \leq 0.55^\circ$;

a semiconductor buffer layer formed on the principal surface of the substrate and made of $(AlN)_x(GaN)_{1-x}$ ($0 < x \leq 1$); and

a nitride semiconductor layer formed on the semiconductor buffer layer, including at least one kind or plural kinds selected from among 13 group elements and As.

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Claim 2, as amended, requires the limitation of canceled claim 17. Claim 17 was missing from both Groups I and II of the restriction requirement dated June 10, 2005. Applicant believes that the omission of claim 17 was inadvertent and that it should have been included in elected Group I and species b.

With the deviation angle θ_1 being $0^\circ < \theta_1 \leq 0.55^\circ$, it is possible to grow a nitride semiconductor layer which has a smooth surface (Applicant's specification, at p. 24, lines 5-10). However, this is neither taught nor suggested by Hori et al. (U.S. Patent No. 6,583,468) or Otani et al. (U.S. Patent No. 6,566,218). Furthermore, this advantageous effect of the present invention is neither taught nor suggested by Hori or Otani.

In light of the foregoing, Applicant respectfully submits that the cited references could not have anticipated or rendered obvious claim 2, because the cited references fail to teach or suggest each and every claim limitation. Claims 4 and 8 depend from claim 2 and cannot be anticipated or rendered obvious for at least the same reasons as claim 2. Withdrawal of these rejections is thus respectfully requested.

Claims 15 and 19 stand rejected under 35 U.S.C. § 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Hori et al. (U.S. Patent No. 6,583,468). The Applicant respectfully traverses the rejection.

Claims 15 and 19 depend from claim 2 and therefore, cannot be anticipated or rendered obvious over the cited references for the reasons discussed above. Withdrawal of this rejection is thus respectfully requested. In addition, the Applicant believes that "an angle θ formed by normal principal surface of the substrate" referred to by the Office is a typographical error and that the Office intended to refer to "an angle θ formed by a normal line of the principal surface of

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the substrate." However, for clarification purposes, the Applicant notes that "normal" in this context is not intended to be the antonym of "abnormal." Figure 2 and the Applicant's specification, at p. 29, lines 12-17 teach that a normal line of a principal surface 34 of the substrate 10 is inclined with respect to a crystal axis 32 which is a [0001] axis perpendicular to a (0001) plane 31 of the substrate 10, by an angle θ_1 , which is larger than or equal to 0° and less than or equal to 5° ($0^\circ \leq \theta_1 \leq 5^\circ$).

Claims 2, 4, and 6 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Otani et al. (U.S. Patent No. 6,566,218). The Applicant respectfully traverses the rejection. Claims 2, 4, and 6 cannot be anticipated or rendered obvious over Otani for the reasons discussed above. Withdrawal of this rejection is thus respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103:

Claims 10-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hori et al. (U.S. Patent No. 6,583,468) in view of Koike et al. (U.S. Patent No. 6,830,948). The Applicant respectfully traverses this rejection.

Claims 10-13 depend from claim 2 and therefore, cannot be rendered obvious over Hori for the reasons discussed above. Koike cannot remedy the defect of Hori and is not relied upon by the Office for such. Instead, the Office cites Koike for the buffer layer teaching.

In light of the foregoing, Applicant respectfully submits that the cited references could not have rendered obvious claims 10-13, because the cited references fail to teach or suggest each and every claim limitation. Withdrawal of this rejection is thus respectfully requested.

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In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

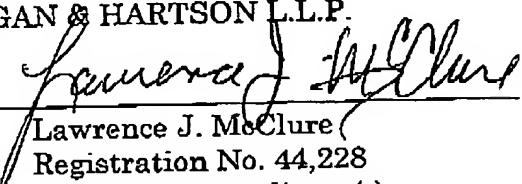
If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6810 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

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Date: October 26, 2005

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